

MATT WARNER RESERVOIR



Introduction

Matt Warner Reservoir is a medium sized stabilized lake on Pot Creek in extreme northeastern Utah. It was built for agricultural purposes, but was purchased by the DWR to provide a fishery for the public. Although it is far removed from any metropolitan areas, it is near Flaming Gorge National Recreational Area and is a popular fishing

spot. This area is also prime elk habitat. Elk herds are commonly seen while driving around the area. Crouse and Calder Reservoirs are also stabilized lakes owned by the DWR in the same drainage.

Matt Warner Reservoir was created in 1938 and modified in 1986 by the construction of an earth-fill dam.

Characteristics and Morphometry

Lake elevation (meters / feet)	2,298 / 7,540
Surface area (hectares / acres)	120 / 297
Watershed area (hectares / acres)	2,334 / 5,767
Volume (m ³ / acre-feet)	
capacity	3,447,468 / 2,796
conservation pool	3,447,468 / 2,796
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	7.0 / 23
mean	2.9 / 9.4
Length (meters / feet)	2,578 / 8,458
Width (meters / feet)	854 / 530
Shoreline (km / miles)	8.17 / 5.07

Location

County	Uinta
Longitude / Latitude	109 17 49 40 46 24
USGS Map	Jackson Draw, 1967
DeLorme's Utah Atlas & Gazetteer™	Page 57, B-4
Cataloging Unit	(16060001)

The reservoir shoreline is primarily privately owned, but public access is unrestricted. The DWR purchased the reservoir in 1978 for use as a fishing lake. It no longer functions as a reservoir, but as a lake. It is now held at full pool thus enhancing the fishery.

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Recreation

Matt Warner Reservoir is accessible from US 191 between Vernal and Dutch John. From an intersection between mileposts 224 and 225 (10.5 miles south of the U-44/US-191 intersection and 4 miles north of the Red Cloud Loop turnoff), turn east on an improved gravel road (FS-048, signed to Diamond Mountain) and follow it for about 8 miles to where the main road turns right. Go straight, follow the road as it makes a sharp bend to the left, then bears due north for 0.5 miles and another road branches off to the right. Take this right fork for just over three miles, and turn north on an unimproved dirt road for one mile to the reservoir.

Another route is on the Jones Hole Road from Vernal. Travel west on 500 N in Vernal as it goes out of town and winds up Diamond Mountain. Twenty-two miles from Vernal, turn left on a gravel road marked Highway 44 9, Little Hole. (US-191 was originally U-44, and the BLM has not updated the sign). Follow this road for five miles, then turn north on another gravel road where the main road forks to the west. (If in doubt, use a compass). This road joins the above mentioned right fork after two miles, (turn right) and turn left in 2.5 miles to the reservoir.

Because of the lack of signs, a compass and the USGS 1:100,000 Dutch John map are highly recommended. The DeLorme's Utah Atlas and Gazetteer is a reasonable substitute.

Fishing is the primary use of the reservoir. It is well stocked, and the DWR maintains a boat ramp.

Recreational facilities at the reservoir include latrines and a boat ramp. There are no private or public campgrounds nearby.

Watershed Description

Matt Warner Reservoir is located in an area of rolling hills and flat valley bottoms. The Uintas are lower in this area

Slopes in the Pot Creek drainage are not steep (30% maximum) and very little erosion is occurring. There are some mid-elevation mountains at the headwaters of Pot Creek, but these are small compared to the higher mountains several miles further west.

The watershed high point, the east shoulder of Mount Lena, is 2,832 m (9,292 ft) above sea level, thereby developing a complex slope of 5.5% to the reservoir. The average stream gradient of Pot Creek is 0.9% (48 feet per mile). The inflow and outflow is Pot Creek.

The watershed is made up of mountains and mountains meadows. The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of spruce-fir, aspen and grasslands. The watershed receives 41 - 51 cm (16 - 20 inches) of precipitation annually. The frost-free season around the reservoir is 60 - 80 days per year.

Land use in the watershed is rangeland on the privately owned areas (about 50%) and multiple use (rangeland and recreation) in the areas owned by the BLM and the Forest Service (about 25% each).

Limnological Assessment

The water quality of Matt Warner Reservoir is fairly good. It is considered to be moderately hard with a hardness concentration value of approximately 82 mg/L (CaCO₃). The only parameters that have exceeded State water quality standards for defined beneficial uses are phosphorus. The average concentration of total phosphorus in the water column in 1992 was 86 ug/L which exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The phosphorus concentration in the hypolimnion was 98 ug/L in late summer, but has reached a level of 138 ug/L during March, 1991 under the ice. This increased concentration occurred due to anoxic conditions at the time. A review of a March 14, 1991 profile indicates that the dissolved oxygen concentration

Limnological Data

Data sampled from STORET sites:

593785, 593786

Surface Data	1992
Trophic Status	E
Chlorophyll TSI	45.76
Secchi Depth TSI	46.27
Phosphorous TSI	68
Average TSI	53.35
Chlorophyll <i>a</i> (ug/L)	4.7
Transparency (m)	2.83
Total Phosphorous (ug/L)	84
pH	8.3
Total Susp. Solids (mg/L)	3.3
Total Volatile Solids (mg/L)	1
Total Residual Solids (mg/L)	3
Temperature (°C / °f)	15/59
Conductivity (umhos.cm)	179

Water Column Data

Ammonia (mg/L)	0.12
Nitrate/Nitrite (mg/L)	0.02
Hardness (mg/L)	82
Alkalinity (mg/L)	86
Silica (mg/L)	7.7
Total Phosphorous (ug/L)	86

Miscellaneous Data

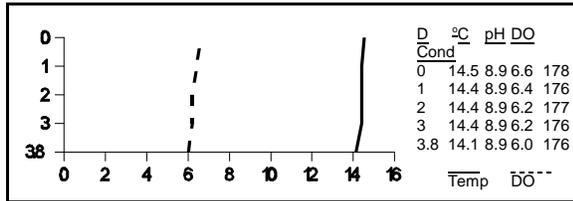
Limiting Nutrient	N
DO (Mg/l) at 75% depth	6.2
Stratification (m)	NO
Depth at Deepest Site (m)	3.8

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throughout the water column was near the 0.2 m/L except at the 1 meter depth where it was 1.6 mg/L. These conditions may be detrimental to an overwintering fish population.

The natural shallowness of the reservoir limits the opportunity for stratification to develop. Current data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is eutrophic with fairly high productivity.

According to DWR frequent fish kills have been reported in recent years during the winter period. Recent



stocking reports indicate that the reservoir is stocked annually with a combination of fingerling and catchable rainbow trout (*Oncorhynchus mykiss*). The last report indicated 50,000 fingerling and 5,000 catchable were placed in the reservoir. The reservoir has not been chemically treated by the DWR, so populations of native fishes may still be present in the lake.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
<i>Sphaerocystis schroeteri</i>	7.923	93.96
<i>Microcystis aeruginosa</i>	0.245	2.90
<i>Stephanodiscus niagarae</i>	0.176	2.09
Pennate diatoms	0.067	0.79
Centric diatoms	0.018	0.21
<i>Oocystis sp.</i>	0.004	0.05
Total	8.429	
Shannon-Weaver [H']	0.30	
Species Evenness	0.17	
Species Richness	0.22	

The phytoplankton community is dominated by green algae but there are blue-green algae present. This indicates that the water quality of the reservoir is fairly good.

Information	
Management Agencies	
Uinta Basin Association of Governments	722-4518
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Recreation	
Dinosaurland Travel Region (Vernal)	789-6932
Vernal Chamber of Commerce	789-1352
Reservoir Administrators	
Division of Wildlife Resources	538-4700

Pollution Assessment

Nonpoint pollution sources include sedimentation and nutrient loading from grazing and litter or wastes from recreation.

Grazing takes place throughout the watershed and in the vicinity of the reservoir, however the area immediately adjacent to the reservoir is fenced.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).